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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/715,420	11/19/2003	Kyoung-Ju Lee	P-0567	5338
34610	7590	07/22/2005	EXAMINER	
FLESHNER & KIM, LLP P.O. BOX 221200 CHANTILLY, VA 20153			CASCHERA, ANTONIO A	
			ART UNIT	PAPER NUMBER
			2676	

DATE MAILED: 07/22/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

10/715,420

Applicant(s)

LEE, KYOUNG-JU

Examiner

Antonio A. Caschera

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 05/10/05.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-57 is/are pending in the application.
- 4a) Of the above claim(s) 22 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☐ Claim(s) 1-21, 23-40, 42-44, 46-48 and 51-57 is/are rejected.
- 7) ☒ Claim(s) 41, 45, 49, 50 and 54 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 19 November 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_

## DETAILED ACTION

### *Priority*

1. Acknowledgment is made of applicant's claim for foreign priority under 35

U.S.C. 119(a)-(d). The certified copy has been filed in the pending application.

### *Claim Rejections - 35 USC § 112*

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. Claims 55-57 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 55 recites the limitation "the first RGB values" in line 2 of the claim. There is insufficient antecedent basis for this limitation in the claim.

### *Claim Rejections - 35 USC § 103*

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

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3. Claims 1-21, 23-40, 42-44, 46-48, 51-53 and 55-57 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yi (U.S. Patent 6,778,187 B1) in view of Kondo (U.S. Patent 6,556,209 B2).

In reference to claims 1, 13, 20-21, 25, 27, 30-32, 34 and 37-39, Yi discloses a method and device for processing 24-bit digital video or graphics data by reducing color component bit length and storing the reduced color component bits by concatenating them within a 16 bit memory space (see column 2, lines 51-59). Yi discloses that the bit reducing method may reduce an 8 bit red color component to 5 bits, an 8 bit green color component to 5 bits and an 8 bit blue color component to 4 bits allocating the 2 remaining bits to represent a special attribute (see columns 2-3, lines 63-1). Yi discloses receiving source RGB color data in the form of 24 bit color data and determines a source depth per color component which represents the number of bits per color components, defined as 8 bits per RGB color components by Yi (see column 5, lines 28-36). Not, the office interprets Yi to inherently disclose a, "divider" to divide the 24 bit source data into 8 bit RGB color data as Yi discloses determining a source depth per color component which represents the number of bits per color components and a video graphics processor for performing real-time processing of graphics and/or video data (see column 4, lines 48-50). Yi also discloses shifting each color component by a predetermined value, combining these shifted values to form one 16 bit length color data and storing the 16 bit length color data in memory (see column 5, lines 57-60, column 6, lines 15-39 and #S27 and S28 of Figure 2). Note, the office interprets Yi to inherently disclose a, "combiner" as shifted values are combined to form one 16 bit length color data while Yi also discloses a video graphics processor for performing real-time processing of graphics and/or video data (see column 4, lines 48-50). Yi

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does not explicitly disclose comparing the RGB color components to see which one has a comparatively greater specific gravity however Kondo does. Kondo discloses a memory apparatus of a digital video signal processing circuit implementing color compressing processing of digital video data (see column 2, lines 35-37 and column 4, lines 65-67). Kondo discloses receiving three primary RGB color data comprised of 24 bits in length, obtaining 8 bits per RGB component and compressing this data (see column 5, lines 9-16). Kondo further discloses calculating the absolute value of the difference of primary color data of adjacent pixels and comparing these results to obtain the maximum value of R, G, B (see column 5, lines 16-43). Dependent upon which value, R, G, B is determined to be the maximum color value, data compression is varied by the number of bits each color component is compressed to (see column 5, lines 44-46). Further, Kondo discloses that when a maximum of R is determined, 8 bit red input data is compressed to 6 bit red data, while when a maximum of G is determined, 8 bit green input data is compressed to 7 bit green data and when a maximum of B is determined, 8 bit blue input data is compressed to 6 bit blue data (see columns 5-6, lines 50-3 and Figure 2). Note, the office interprets such determining of a maximum color component value of Kondo functionally equivalent to applicant's calculating of a specific gravity as described on pages 6-7, paragraph 23 of the specification. It would have been obvious to one of ordinary skill in the art at the time the invention was made to implement the color data reduction methods of Yi with the color compression methods based upon maximum RGB component values of Kondo in order to utilize compressed color data, which saves memory resources, while producing a natural picture with sufficient tones and good quality onto a display (see column 1, lines 8-10 and column 7, lines 50-60 of Kondo). Note, in reference to claims 13, 22 and 34, the office interprets the 24 bit

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source color data and 16 bit reduced output color data of Yi equivalent to applicant's first and second RGB color values respectively. Further note, in reference to claims 20, 22, 25, 30-32 and 37-39 the office equates applicant's values of M and N to Yi's 24 bit source color data and 16 bit output value stored in memory respectively.

In reference to claim 2, Yi and Kondo disclose all of the claim limitations as applied to claim 1 above. Kondo discloses that when a maximum of R is determined, 8 bit red input data is compressed to 6 bit red data (see columns 5-6, lines 50-3 and Figure 2).

In reference to claim 3, Yi and Kondo disclose all of the claim limitations as applied to claim 1 above. Yi discloses that the bit reducing method may reduce an 8 bit red color component to 5 bits, an 8 bit green color component to 5 bits and an 8 bit blue color component to 4 bits allocating the 2 remaining bits to represent a special attribute (see columns 2-3, lines 63-1). Note, the office interprets that the color of less gravity are normally compressed meaning, a significance of that color is not present therefore not incorporated in coding which Yi discloses when both red and green color component bits are reduced or compressed.

In reference to claims 4, 7 and 10, Yi and Kondo disclose all of the claim limitations as applied to claim 1 above in addition, Kondo further discloses two additional bits being stored to the high order side of the color determined to be a maximum color (see columns 5-6, lines 50-3).

In reference to claims 5, 6, 8, 9, 11 and 12, Yi and Kondo disclose all of the claim limitations as applied to claim 1 above. Although the combination of Yi and Kondo discloses compressing or reducing color data based upon a specific dominant color or determined maximum color and Yi specifically discloses reducing the 8 bit per RGB color data to a ratio of 5:5:4, 4:5:4 or 4:5:3 for each RGB component (see columns 2-3, lines 63-11), neither Yi nor

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Kondo explicitly disclose the specific ratios of 6:5:5, 5:6:5 or 5:5:6 derived from bit shifting each color component data by a specified 2 or 3 bits. At the time the invention was made, it would have been obvious to one of ordinary skill in the art to implement the specific reduced RGB ratios by bit shifting using the specific values of applicant's claims. Applicant has not disclosed that using these explicit values for RGB respectively provides an advantage, is used for a particular purpose, or solves a stated problem. One of ordinary skill in the art, furthermore, would have expected Applicant's invention to perform equally well with the reduced compression ratios of Yi in combination with the maximum color component determining methods of Kondo because the exact ratios and shifting values are a matter of design choice as preferred by the designer and to which best suits the application at hand. Therefore, it would have been obvious to one of ordinary skill in this art to modify Yi and Kondo to obtain the invention as specified in claims 5, 6, 8, 9, 11 and 12 respectively.

In reference to claim 14, Yi and Kondo disclose all of the claim limitations as applied to claim 13 above. Yi discloses receiving source RGB color data in the form of 24 bit color data and determines a source depth per color component which represents the number of bits per color components, defined as 8 bits per RGB color components by Yi (see column 5, lines 28-36). Yi further discloses that the 8 bits per RGB are representative of a pixel (see column 5, lines 30-32).

In reference to claims 15, 23, 24, 26, 28, 29, 33, 35, 36 and 40, Yi and Kondo disclose all of the claim limitations as applied to claims 13, 21, 27 and 34 above. Yi discloses that the bit reducing method may reduce an 8 bit red color component to 5 bits, an 8 bit green color component to 5 bits and an 8 bit blue color component to 4 bits allocating the 2 remaining bits to

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represent a special attribute (see columns 2-3, lines 63-1). Note, the office interprets that the color of less gravity are normally compressed meaning, a significance of that color is not present therefore not incorporated in coding which Yi discloses when both red and green color component bits are reduced or compressed. Kondo discloses that when a maximum of R is determined, 8 bit red input data is compressed to 6 bit red data (see columns 5-6, lines 50-3 and Figure 2). Note, the office interprets the first and second number of bits of applicant's claims equivalent to the 6 and 5 bit reduction rates, respectively, of Yi and Kondo.

In reference to claims 16-18, Yi and Kondo disclose all of the claim limitations as applied to claim 13 above, in addition, Kondo further discloses two additional bits being stored to the high order side of the color determined to be a maximum color (see columns 5-6, lines 50-3).

In reference to claim 19, Yi and Kondo disclose all of the claim limitations as applied to claim 13 above. Yi discloses a method and device for processing 24-bit digital video or graphics data by reducing color component bit length and storing the reduced color component bits by concatenating them within a 16 bit memory space (see column 2, lines 51-59). Note, the office equates applicant's values of M and N to Yi's 24 bit source color data and 16 bit output value stored in memory respectively.

In reference to claims 42, 46, 51 and 55, Yi and Kondo disclose all of the claim limitations as applied to claims 1, 13, 27 respectively above. Kondo further discloses calculating the absolute value of the difference of primary color data of adjacent pixels and comparing these results to obtain the maximum value of R, G, B (see column 5, lines 16-43). Dependent upon which value, R, G, B is determined to be the maximum color value, data compression is varied by the number of bits each color component is compressed to (see column 5, lines 44-46). Note,



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the office interprets such calculations and determinations functionally equivalent to the claimed steps of claims 41, 46, 51 and 55. Further, the calculations of differences of primary color data in Kondo inherently determines a scale position for each RGB value as each of the calculated differences and then compares these differences to determine the maximum color value.

In reference to claims 43, 47, 52 and 56, Yi and Kondo disclose all of the claim limitations as applied to claims 42, 46, 51 and 55 respectively above. Kondo further discloses calculating the absolute value of the difference of primary color data of adjacent pixels and comparing these results to obtain the maximum value of R, G, B (see column 5, lines 16-43 and #S103 of Figure 2).

In reference to claims 44, 48, 53 and 57, Yi and Kondo disclose all of the claim limitations as applied to claims 42, 46, 51 and 55 respectively above. Kondo further discloses calculating the absolute value of the difference of primary color data of adjacent pixels and comparing these results to obtain the maximum value of R, G, B (see column 5, lines 16-43 and #S103 of Figure 2). Further, the office interprets such calculated differences equivalent to grayscale positions as the RGB values are operated upon using the 0-255 range (see RGB data in 8-bit format ( $2^8$ )=256, column 5, lines 25-50) which is commonly associated with grayscale values.

### ***Response to Arguments***

4. The cancellation of claim 22 and addition of claims 41-57 is noted.
5. Applicant's arguments, see page 16 of Applicant's Remarks, filed 05/10/05, with respect to the objection of the specification have been fully considered and are persuasive. The

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objection of the specification has been withdrawn since a minor informality has been corrected for.

6. Applicant's arguments, see 16 of Applicant's Remarks, filed 05/10/05, with respect to the objection to claims 24, 29 and 36 have been fully considered and are persuasive. The objection of claims 24, 29 and 36 has been withdrawn since a minor informality has been corrected for.

7. Applicant's arguments filed 05/10/05 have been fully considered but they are not persuasive.

In reference to claims 1, 13, 20, 27 and 34, Applicant argues that Kondo does not explicitly disclose shifting each of the 8-bit RGB values and instead shifts only the RGB value that is determined as the maximum value (see pages 17-18 of Applicant's Remarks). The office disagrees and explains the interpretation of the claim language, "...a shifter which shifts each of the 8-bit RGB values..." as the following. The office interprets that since each pixel is defined by a grouping of 8-bit RGB values, the shifting in Kondo is done on such a grouping. The "each of the 8-bit RGB values" is interpreted by the office as meaning for all pixels which make up the image since each pixel is made up of 8-bit RGB value groupings. Kondo discloses shifting each of the 8-bit groupings of RGB colors for all pixels and therefore with this broad interpretation of the claim language, the office interprets Kondo to read upon the recited claim language and maintains its current rejection. Further, Applicant utilizes the phrase, "...all three RGB values..." on page 18 of Applicant's Remarks, to further explain the shifting of values which the office suggests amending to the claim to further differentiate between Kondo and the invention at hand.

Also, in reference to these claims, Applicant argues that Kondo does not perform the function of allocating at least one extra bit to the color having the greater specific gravity (see pages 18-19 of Applicant's Remarks). The office disagrees and further points to column 5, lines 50-60 of Kondo to show that further bits, including at least one, are added to the resulted shift value and stored therefore the Office interprets that Kondo allocates such extra bits to the color having the greater specific gravity or maximum color.

### *Allowable Subject Matter*

8. Claims 41, 45, 49, 50 and 54 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

In reference to claims 41, 45, 49, 50 and 54, the prior art of record (Yi (U.S. Patent 6,778,187 B1) and Kondo (U.S. Patent 6,556,209 B2)) does not explicitly disclose allocating a same number of extra bits to the color value of shifted RGB color values, irrespective of which one of the TGB color values has the greater specific gravity, in further combination with the claim limitations of claims 1, 13, 20, 27 and 34 respectively, from which claims 41, 45, 49, 50 and 54 claim dependency upon.

### *Conclusion*

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

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A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Antonio Caschera whose telephone number is (571) 272-7781. The examiner can normally be reached Monday-Thursday and alternate Fridays between 7:30 AM and 5:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Matthew Bella, can be reached at (571) 272-7778.

**Any response to this action should be mailed to:**

Commissioner of Patents and Trademarks

Washington, D.C. 20231

**or faxed to:**

**(703) 872-9314 (for Technology Center 2600 only)**

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Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Technology Center 2600 Customer Service Office whose telephone number is (703) 306-0377.

aac

7/20/05

A handwritten signature in black ink, appearing to read "Matthew C. Bella". The signature is fluid and cursive, with the first name "Matthew" being more prominent than the last name "Bella".

MATTHEW C. BELLA  
SUPERVISORY PATENT EXAMINER  
TECHNOLOGY CENTER 2600